IPC-610F

Industrial PC Chassis

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Chapter 1 General Information

1.1 Introduction

The IPC-610F is a PC/AT-compatible computer designed for industrial applications. This rugged, all-steel chassis meets the EIA RS-310C 19" rackmount standard. The unit includes a 14-slot PC-bus compatible passive backplane, and a more efficient switching power supply in a single fan-cooled chassis.

The passive backplane configuration of the IPC-610F minimizes downtime, simplifies troubleshooting, makes upgrading easier and allows for a more efficient system package. All electronic components are modular in design and can be easily serviced. The IPC-610F accommodates most plug-in cards, including CPU, video, disk controller, and I/O interface cards. They can be conveniently installed and replaced from the top of the unit.

The IPC-610F will withstand shock, vibration, dust, and a wide range of operating temperatures in harsh industrial environments. The chassis is positively pressurized by two filtered push-pull cooling fans to exclude dust and dirt. A lockable door protects drives and switches from tampering and foreign particles.

1.2 Model List

Model Number	Version	Power Supply	Dimensions (W x D x H)
IPC-610BP-30XF	Blackplane	PS-300ATX	482 x 452 x 177 mm
IPC-610MB-30XF	Motherboard	PS-300ATX	482 x 502 x 177 mm

1.3 Specifications

General

- **Construction**: Heavy-duty steel
- **Disk drive capacity**: Three half-height 5¼" drives and one 3½" drive accessible from the front panel; and one 3½" HDD inside the chassis
- **Cooling system**: One 32 CFM cooling fan (flow-out) on the rear panel for the power supply, another 86 CFM fan (flow-in) with Hot-plug connector on the front panel with an air filter
- **Keyboard connector**: Pre-wired DIN connectors on rear panels
- **Controls**: Reset, power on/off and keyboard-lock switches
- **Indicators**: LEDs for power on/off, HDD and keyboard-lock
- **Speaker**: One 5 Ω, ½ watt speaker
- **Weight**: 18.5 kg (40.7 lb)
- **Paint color**: Pantone 414U
- **Dimensions (W x D x H)**: 482 x 452 x 177 mm (19" x 17.8" x 7") for IPC-610BP-30XF,
  482 x 502 x 177 mm (19" x 19.8" x 7") for IPC-610MB-30XF

Passive backplane

Model Name	Slots per Segment (ISA / PCI / CPU)	Segment
PCA-6114	14 ISA	Single
PCA-6114P4-B	9 ISA / 4 PCI / 1 CPU	Single
PCA-6114P7	6 ISA / 7 PCI / 1 CPU	Single
PCA-6114P10	3 ISA / 10 PCI / 1 CPU	Single
PCA-6113P4R	8 ISA / 4 PCI / 1 CPU	Single

Power supplies

PS-300 ATX

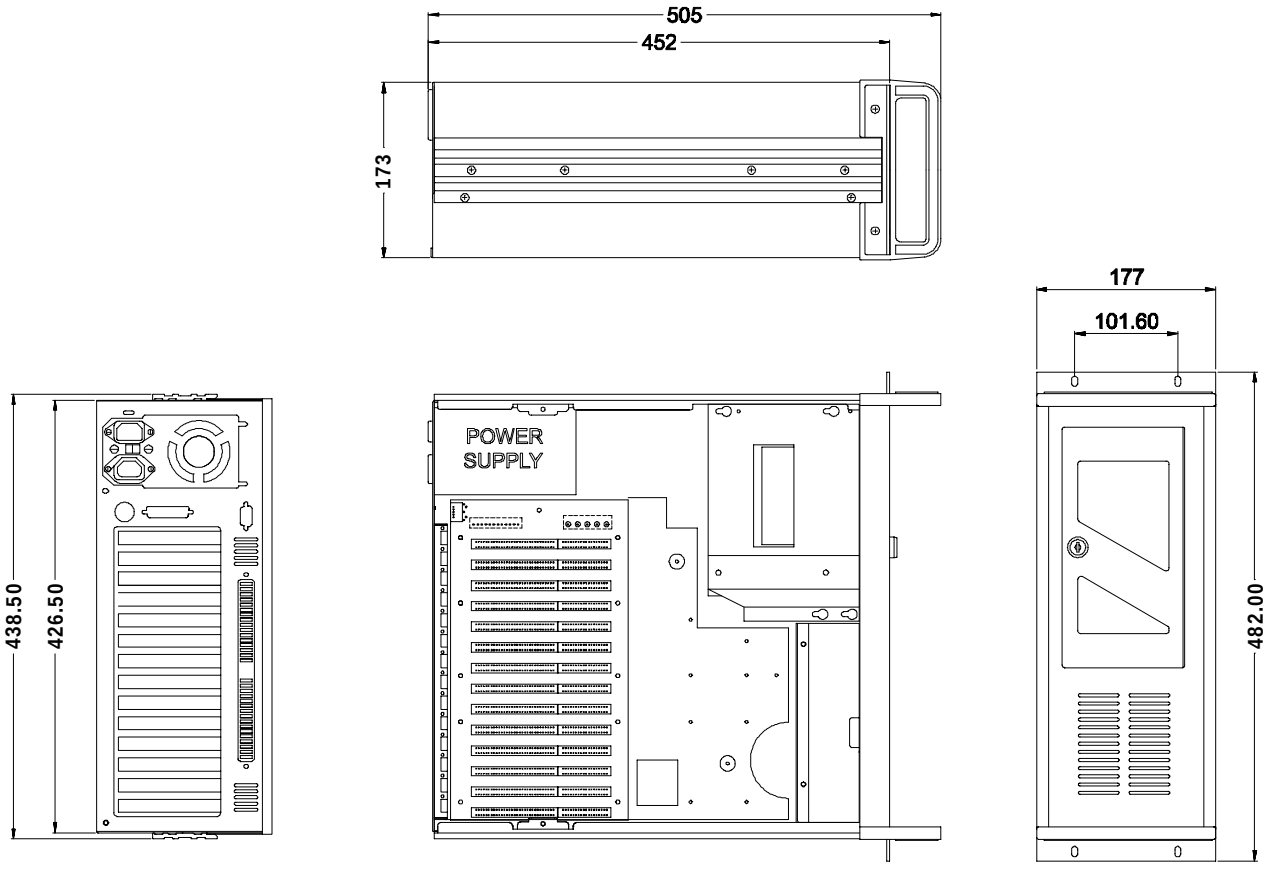
- **Output rating**: 300 watts (max.)
- **Input voltage**: 90 ~ 130 V_{AC} or 180 ~ 265 V_{AC} @ 47 ~ 63 Hz, switchable
- **Output voltages**: +5 V @ 30 A, +12 V @ 13 A, -5 V @ 0.5 A, -12 V @ 0.8 A, +3.3 V @ 26 A, and +5 VSB @ 2 A
- **Minimum load:** +5 V @ 1 A, +12 V @ 0.1 A
- **MTBF**: 100,000 hours at max. load @ 25°
- **Safety**: UL/CSA/CE/CB/NORDIC CENELEC
- **EMI**: FCC, VDE, CISPR 22

Environmental Specifications

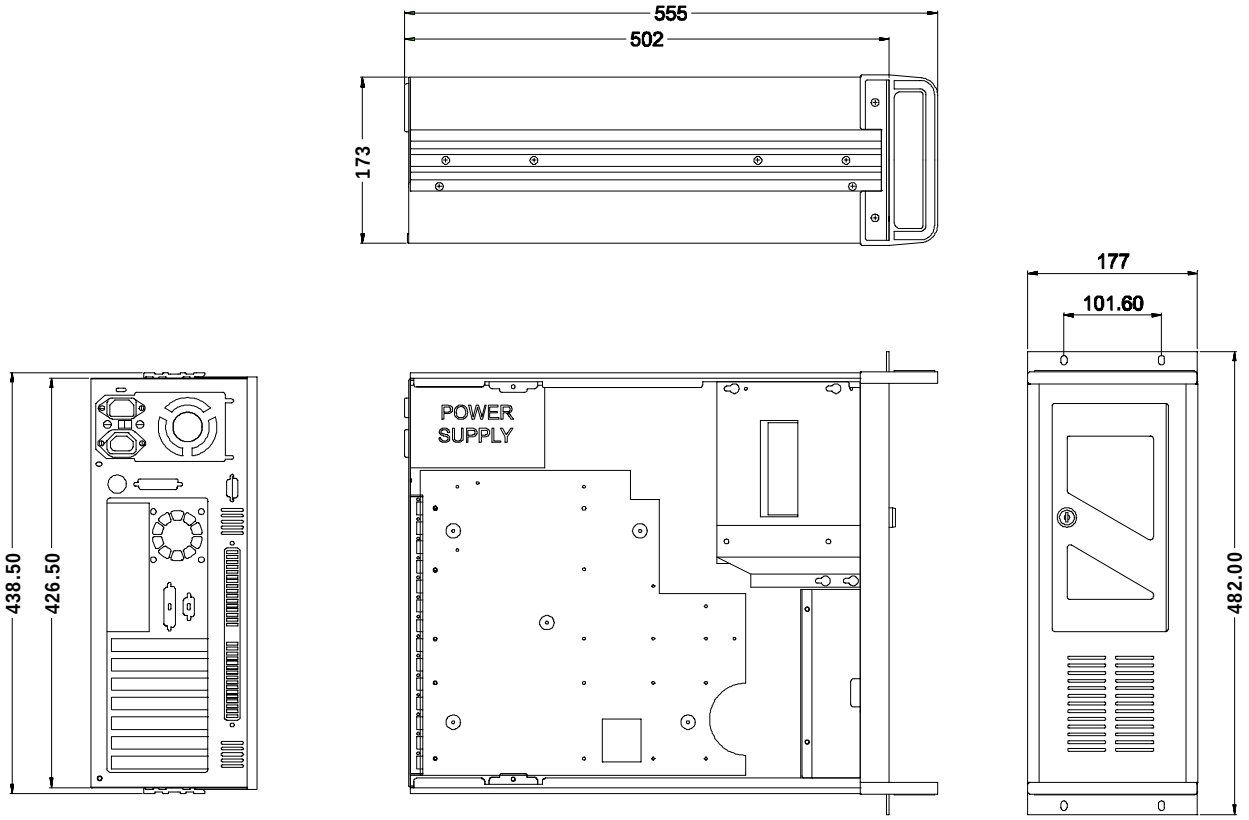
- **Operating temperature**: 0 ~ 50° C (32 ~ 122° F)
- **Relative humidity**: 10 ~ 95% @ 40° C, non-condensing
- **Vibration (operating)**: Random Vibration 5 ~ 500 Hz, 1 G RMS
- **Shock (operating)**: 10 G acceleration peak (11 ms duration)
- **Safety**: C-UL approved
- **EMI**: Meets FCC/CE Class A
- **CE compliant**

1.4 Dimensions

IPC-610BP-30XF



IPC-610MB-30XF



Chapter 2 System Setup

Setting up your IPC-610F requires only a screwdriver and a small amount of time. Before you begin, you should also gather together all of the cards you plan to install, as well as the keyboard you plan to use.

A lockable door is located on the chassis front cover, providing access to the control panel. This offers protection and security against damage and unauthorized access. The control panel functions include power on/off, keyboard lock, reset switch and three LED indicators (power on, keyboard lock and HDD) to assist in monitoring system status. On the rear panel there is a grounding point (earthing point) located on the bottom right hand corner. This provides an earth for the whole system and is attached via a screw.

WARNING: Disconnect all power from the chassis before you install the CPU cards. Unplug the power cord from the wall; turning off the power switch alone is not sufficient. If you are not sure what to do, take the job to an experienced professional.

2.1 Removing the Cover

There are screws which secure the cover to the chassis. They are along the sides, near the top. Remove them, and then slide the cover to the rear of the chassis. See Fig. 2-1 below:

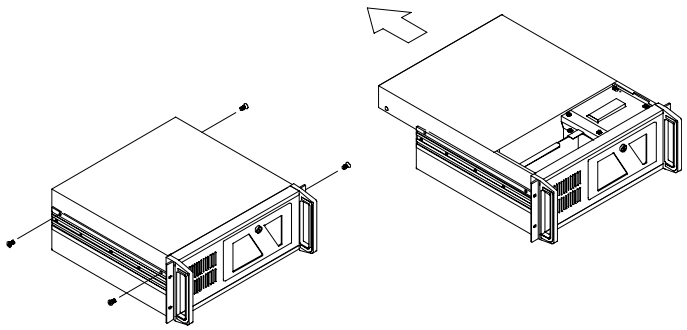


Figure 2-1: Removing the cover

2.2 Adding Your Disk Drives

1. Remove the four outer screws which mount the shock-resistant drive-bay to the chassis. (See Fig. 2-2)
2. Slide the drive bay about 2 cm toward the rear, to a location where it is not obstructed by the upper rim. Lift it free of the chassis.
3. Remove the cover to the drive bay front and insert the drives into their proper locations in the drive bay. (See Fig. 2-3)

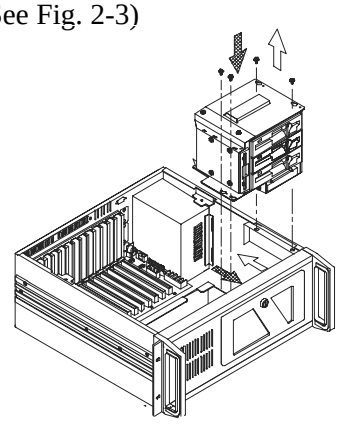


Figure 2-2: Inserting/removing the drive bay

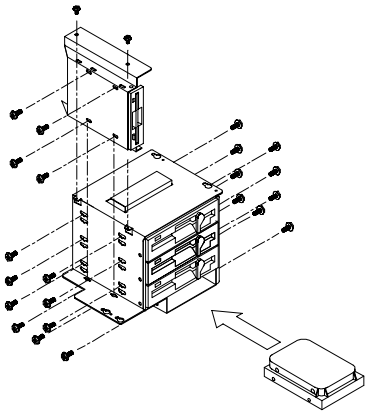


Figure 2-3: Inserting the drives into the drive bay

2.3 The Hold-down Clamp

The IPC-610F uses a hold-down clamp to ensure the plug-in cards are securely fastened. It also offers protection against shock and vibration. To install your cards into the passive backplane, proceed as follows:

1. Detach the hold-down clamp by removing the two screws located at each end and lifting it off the chassis. (See Fig. 2-4)
2. Insert the rubber buffers (provided) into the hold-down clamp. These buffers offer the plug-in cards two levels of protection against vibration. (See Fig. 2-5)

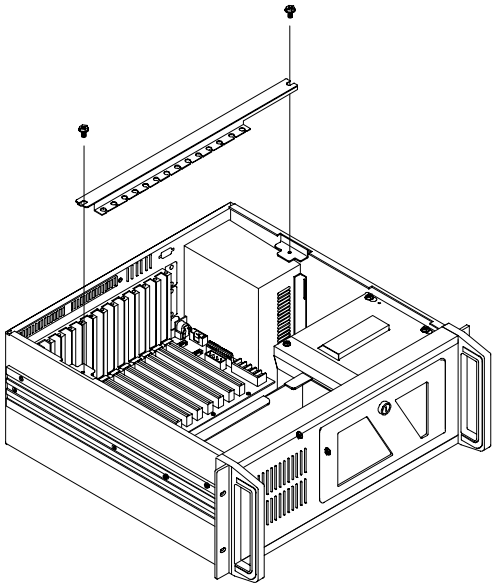


Figure 2-4: Detaching the hold-down clamp

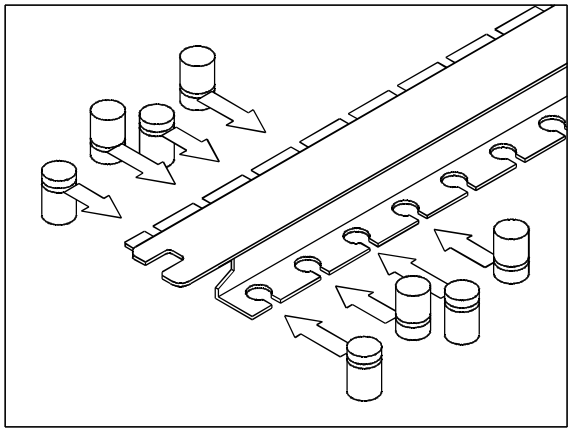


Figure 2-5: Inserting the rubber buffers

2.4 Replacing the Filter

The filter is located next to the lockable door. Under continuous use, the filter should be removed about once a month. To replace the filter, refer to Fig. 2-6 below and do the following:

1. Open the lockable door.
2. Take the filter out by gently pulling the tab and sliding the filter to the right.
3. Slide a new filter in until it snaps into place.
4. Close and lock the lockable door.

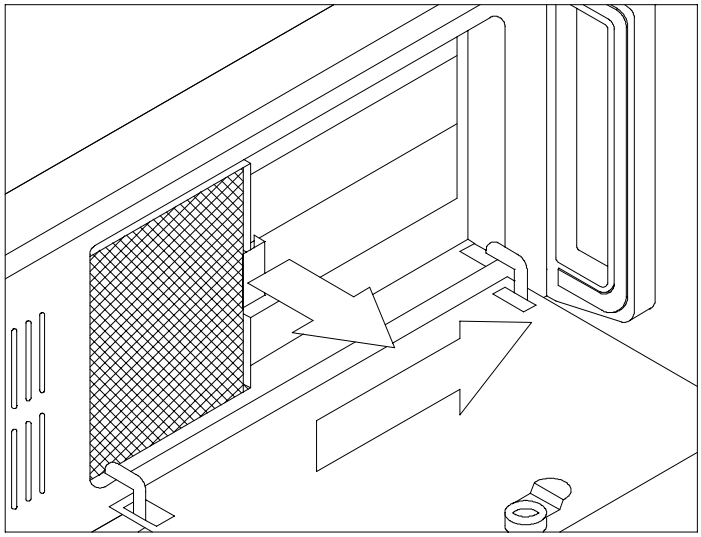


Figure 2-6: Replacing the filter

2.5 The Cooling Fan

The cooling fan which is inside the chassis is designed to be plugged into a connector for easy maintenance. Please refer to figure 2-7 below for illustration.

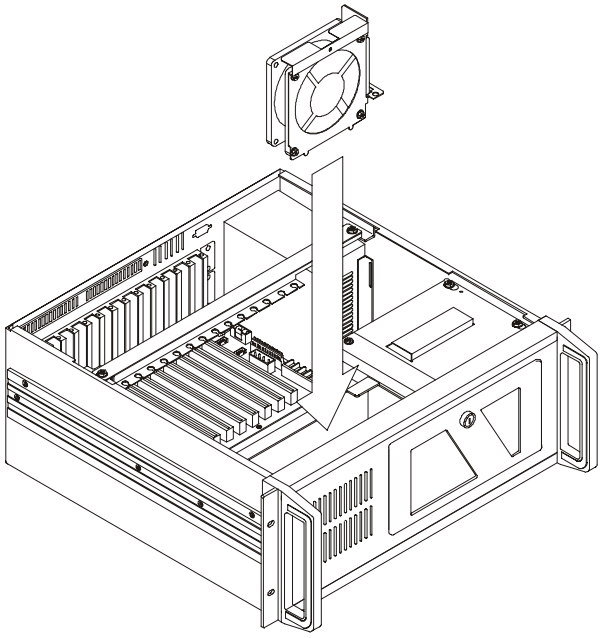


Figure 2-7: Cooling Fan

2.6 Installing the power supply and changing the rear cover and window

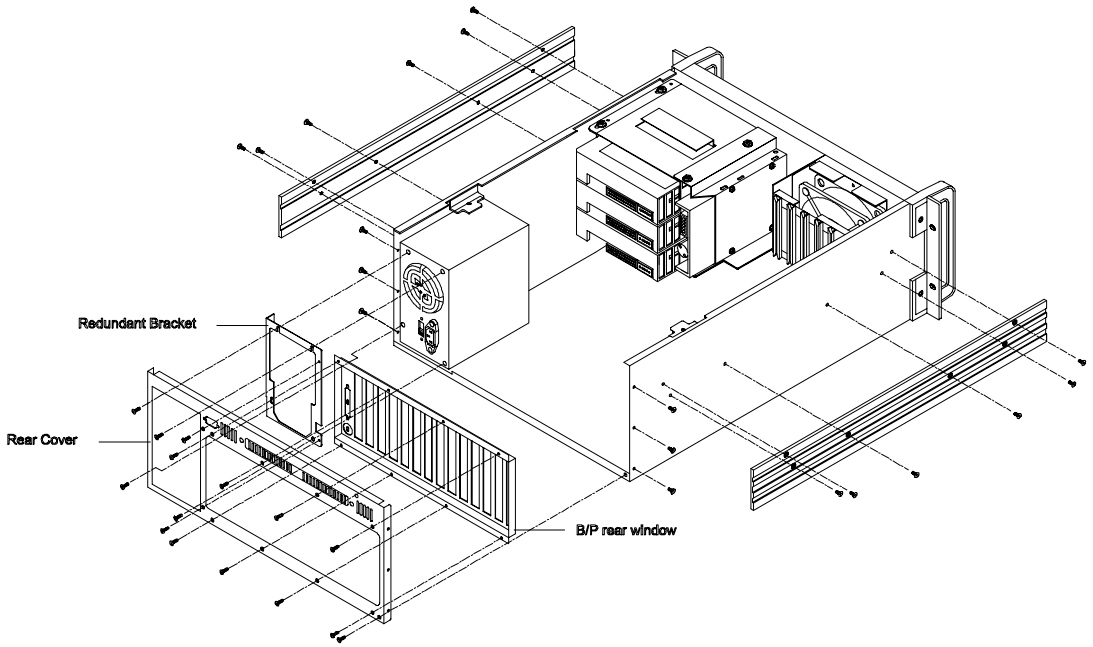


Figure 2-8: IPC-610F with backplane version

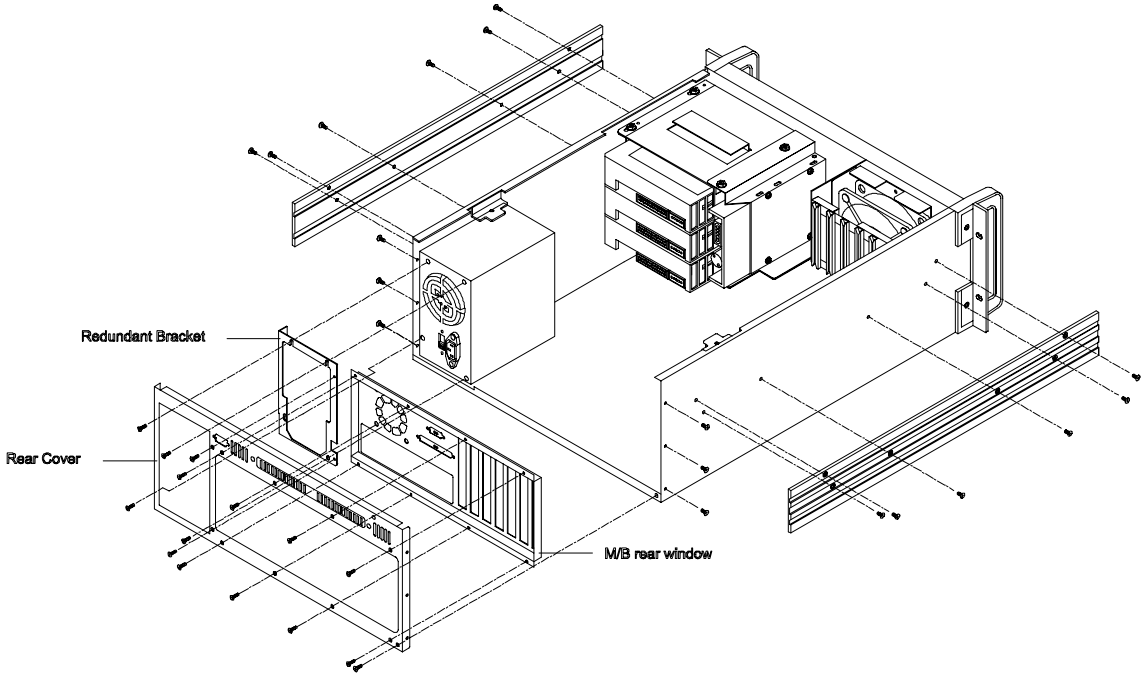
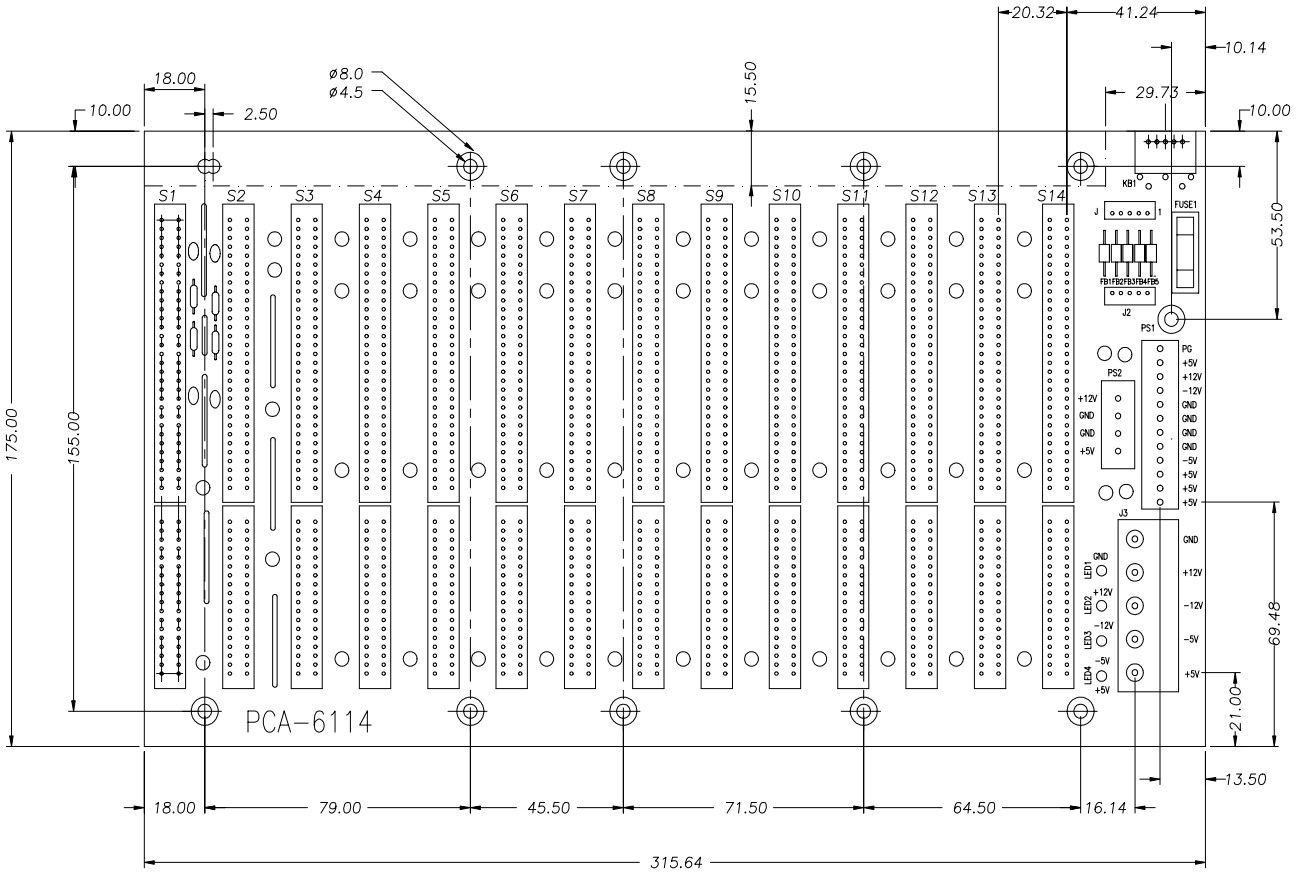


Figure 2-9: IPC-610F with motherboard version

Appendix A Passive Backplanes

A.1 PCA-6114: 14-slot ISA-bus backplane

Dimensions: 316 mm x 175 mm



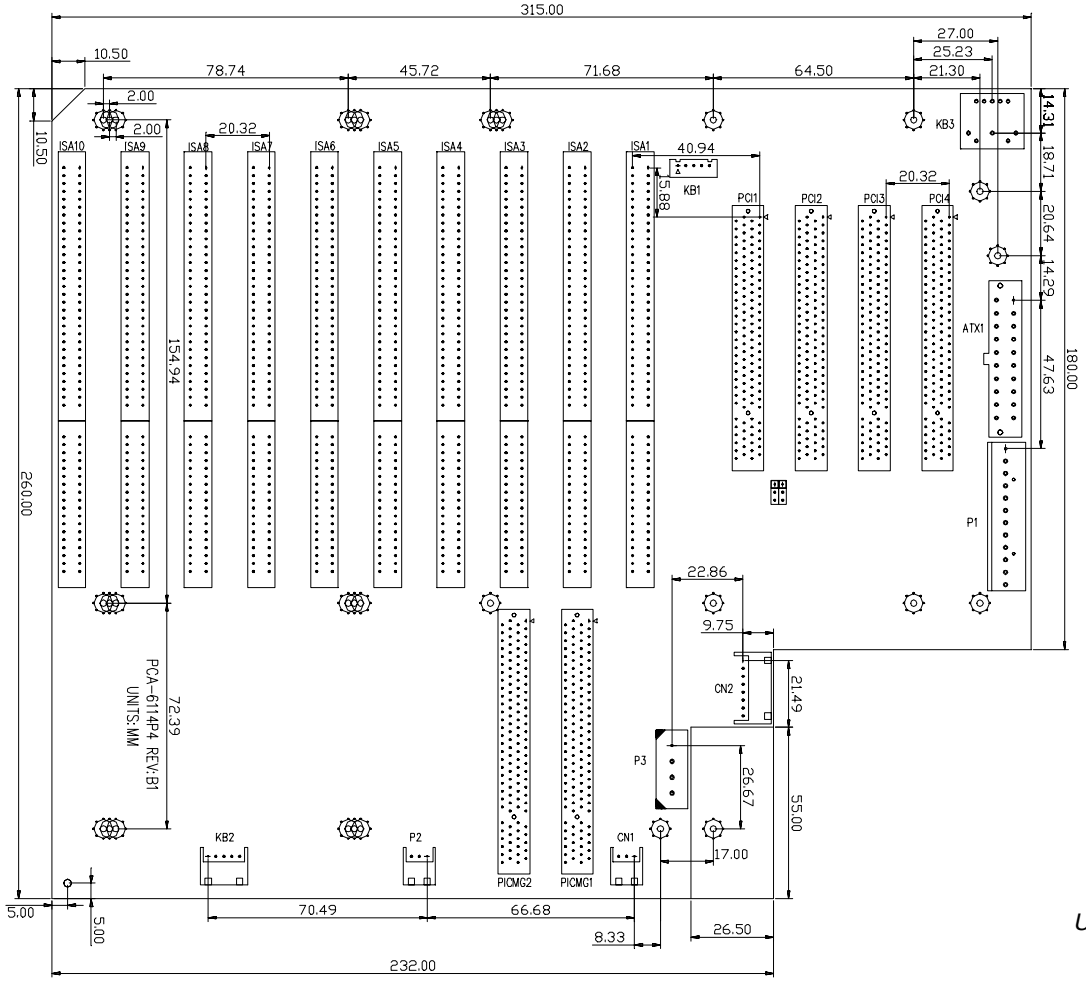
Bus Termination

Reserve sockets of NETR 10P and termination resistors are provided.

Resistor	Signals	Resistor	Signals
RN2	SA7-SA10	RP1	SMEMW, SMEMR, IOW, IOR
RN5	SA15-SA8	RN3	SBHE, LA23-LA17
RN4	SD0-SD7	RN1	LA19-LA16
RN6	SD8-SD15		

A.2 PCA-6114P4-B: 9 ISA / 4 PCI / 1 CPU-slot Backplane

Dimensions: 260 x 315 mm



Unit: mm

1.CONNECTORS

CONNECTOR	DESCRIPTION
ISA2~ISA3	CPU connector
ISA1,ISA4~ISA10	16-bit ISA bus connectors
PCI1~PCI4	32-bit PCI bus connectors
KB1(KB-IN)	To CPU card K/B connector
KB2(KB-OUT)	5-pin external K/B connector
KB3	External K/B connector
P1	PS/2 power connector
P2	For +5V and +12V power connector
P3	Big 4 pin power connector
CN1	To CPU card for ATX power singal
CN2	Alarm board 8-pin power connector
ATX1	ATX power connector
J1	PCI1 IDSEL
J2	PCI2 IDSEL

CN1	
1	5VSB
2	GND
3	PS-ON
Default 2-3 PIN Close	

J1	
1-2 Close	PCI1 IDESL=AD31(Default)
2-3 Close	PCI1 IDSEL=AD27

J2	
1-2 Close	PCI2 IDSEL=AD30(Default)
2-3 Close	PCI2 IDSEL=AD26

2.PIN ASSIGNMENTS

CN2	
PIN	NAME
1	+12V
2	-12V
3	+3.3V
4	+5V
5	-5V
6	GND
7	GND
8	5VSB

P1	
PIN	NAME
1	NC
2	+5V
3	+12V
4	-12V
5	GND
6	GND
7	GND
8	GND
9	-5V
10	+5V
11	+5V
12	+5V

P2	
PIN	NAME
1	+5V
2	GND
3	+12V

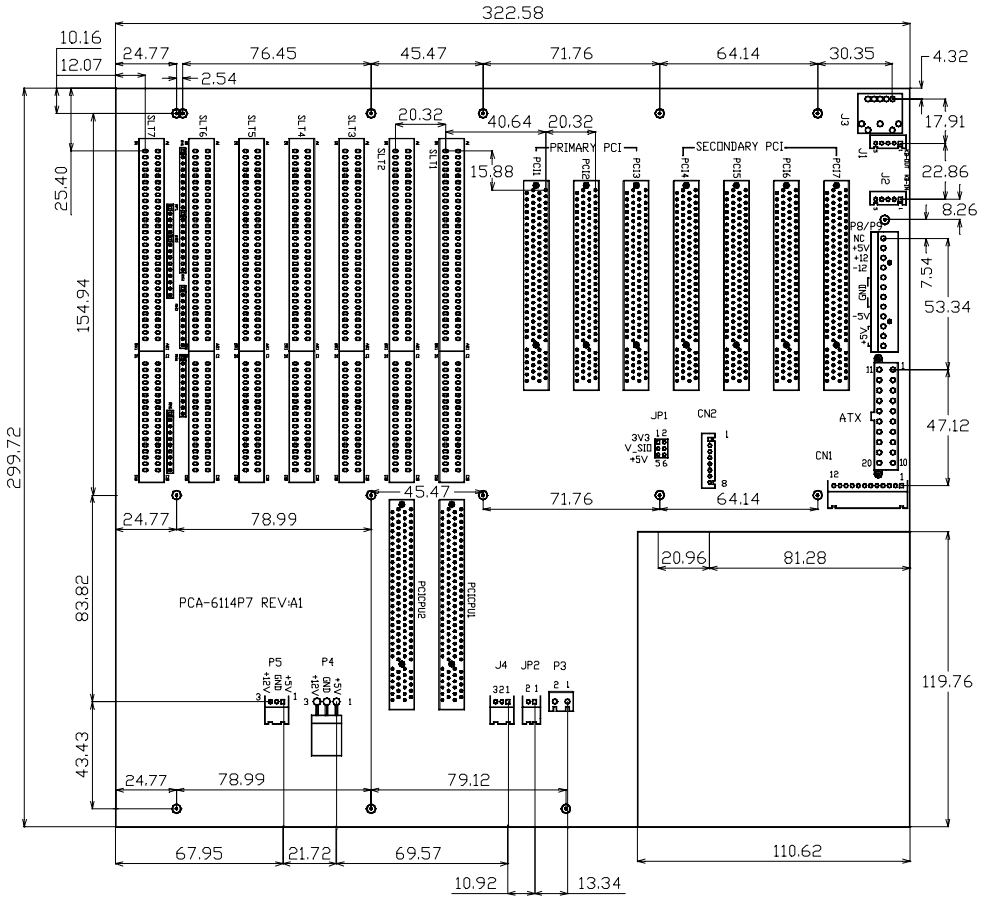
P3	
PIN	NAME
1	+12V
2	GND
3	GND
4	+5V

ATX1			
PIN	NAME	PIN	NAME
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS-ON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	NC	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

KB1 ~ KB3	
PIN	NAME
1	KBCLK
2	KBDATA
3	NC
4	KBGND
5	KBVCC

A.3 PCA-6114P7: 6 ISA / 7 PCI / 1 CPU-slot Backplane

Dimensions: 300 x 323 mm



Unit: mm

1 . CONNECTORS

CONNECTOR	DESCRIPTION
SLT1 ~ 2	CPU connectors
SLT3 ~ 7	16 BIT ISA BUS connectors
PCI 1 ~ 3	32 BIT PCI BUS connectors (primary)
PCI 4 ~ 7	32 BIT PCI BUS connectors (secondary)
CN1	12 Pin power (+ / -5 V , + / -12 V ,+3.3 V),SP,HDD,K/B and reset.
CN2	8 Pin power (+ 5 V) , SP , HDD, KB and Reset Connector
ATX	To ATX power connector
J1(KB - OUT)	To front part K/B connector
J2 (K/B - IN)	To CPU CARD K/B connector
J3	External K/B connector
J4	To CPU CARD for ATX power signal
JP1	V - IO for secondary PCI Bus
JP2	Power ON control for ATX power supply
P3	2 - PIN +5V DC power connector
P4 ~ P5	3 - PIN +5V and +12vDC power connector
P8 / P9	TO PS / 2 power connector

JP1	
1-3,2-4 CLOSED	V_IO = +3.3V for sceondary PCI Bus
✳ 3-5,4-6 CLOSED	V_IO = +5V for sceondary PCI Bus

Default : ✳

JP2	
closed	ATX power supply power ON
open	ATX power supply power OFF

2 . PIN ASSIGNMENTS

CN1	
PIN	NAME
1	+12 V
2	-12 V
3	SP
4	+5 V
5	KBDLOCK
6	KBDDATA
7	KBDCLK
8	-5 V
9	GND
10	RESET
11	HDD
12	+3.3 V

CN2	
PIN	NAME
1	SP
2	+5V
3	KBDLOCK
4	GND
5	GND
6	RESET
7	HDD
8	NC

P3	
PIN	NAME
1	+ 5 V
2	GND

P4 ~ P5	
PIN	NAME
1	+5 V
2	GND
3	+12 V

P8/P9	
PIN	NAME
1	NC
2	+5 V
3	+12 V
4	-12 V
5	GND
6	GND
7	GND
8	GND
9	-5 V
10	+5 V
11	+5 V
12	+5 V

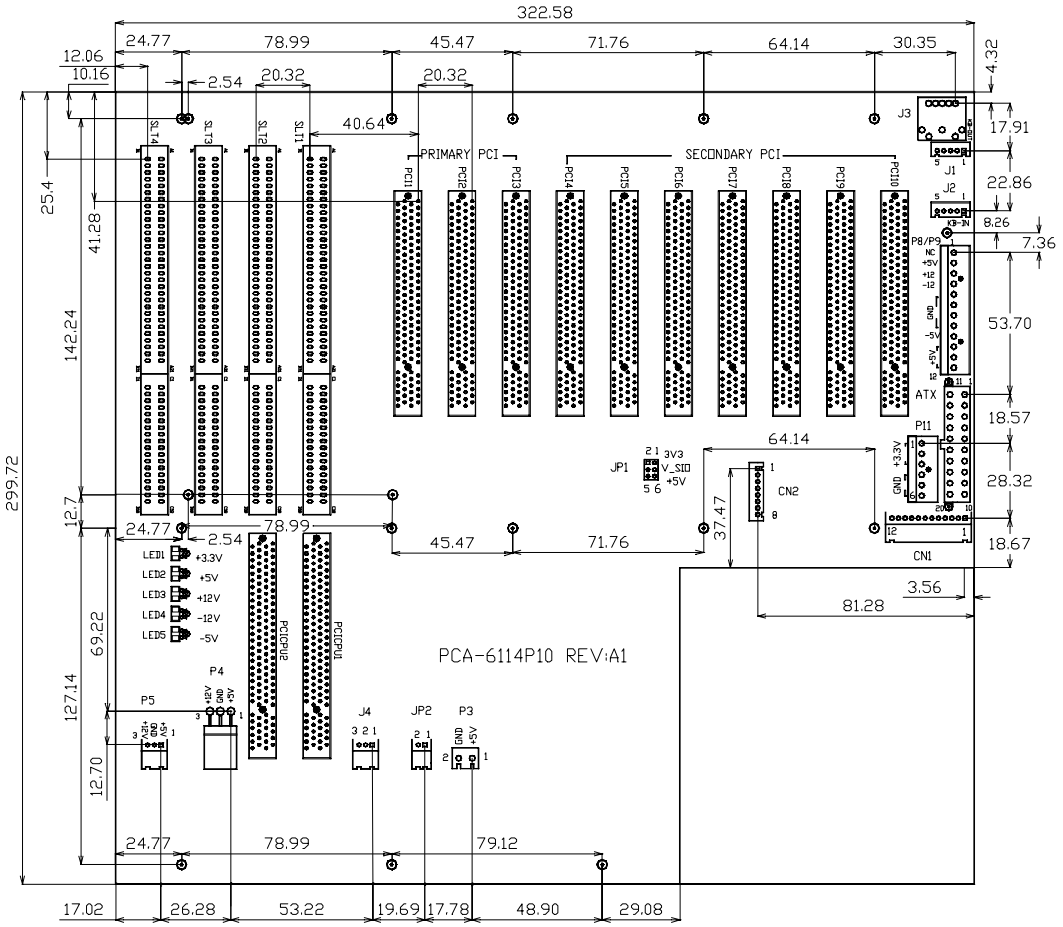
J1~ 3	
PIN	Name
1	KBDCLK
2	KBDDATA
3	NC
4	GND
5	+ 5 V

J4	
PIN	NAME
1	5 V STB
2	GND
3	PS-ON

ATX			
PIN	NAME	PIN	NAME
1	+3.3 V	11	+3.3 V
2	+3.3 V	12	-12 V
3	GND	13	GND
4	+5 V	14	PS-ON
5	GND	15	GND
6	+5 V	16	GND
7	GND	17	GND
8	NC	18	-5 V
9	5 V STB	19	+5 V
10	+12 V	20	+5 V

A.4 PCA-6114P10: 3 ISA / 10 PCI / 1 CPU-slot Backplane

Dimensions: 300 x 323 mm



Unit: mm

1 . CONNECTORS

CONNECTOR	DESCRIPTION
SLT1 ~ 2	CPU connectors
SLT3 ~ 4	16-BIT ISA BUS connectors
PCI 1 ~ 3	32-BIT PCI BUS connectors (primary)
PCI 4 ~ 10	32-BIT PCI BUS connectors (secondary)
CN1	12-Pin power (+/-5 V, +/-12 V,+3.3 V),SP,HDD,K/B and reset Connector
CN2	8-Pin power (+ 5 V) , SP , HDD ,KB and Reset Connector
ATX	To ATX power connector
J1(KB - OUT)	To front part K/B connector
J2 (K/B - IN)	To CPU CARD K/B connector
J3	External K/B connector
J4	To CPU CARD for ATX power connector
JP1	V - IO for secondary PCI Bus
JP2	Power ON control fot ATX power supply
P3	2 - PIN +5 V DC power connector
P4 ~ 5	3 - PIN +5 V and +12 V DC power connector
P8 / P9	TO PS / 2 power connector
P11	6 - PIN +3.3 V DC power connectors

JP2	
closed	ATX power supply power ON
open	ATX power supply power OFF

JP1	
1-3,2-4 CLOSED	V_IO = +3.3 V for sceondary PCI Bus
✳ 3-5,4-6 CLOSED	V_IO = +5 V for sceondary PCI Bus

Default : ✳

2 . PIN ASSIGNMENT

CN1	
PIN	NAME
1	+12 V
2	-12 V
3	SP
4	+5 V
5	KBDLOCK
6	KBDDATA
7	KBDCLK
8	-5 V
9	GND
10	RESET
11	HDD
12	+3.3 V

CN2	
PIN	NAME
1	SP
2	+5 V
3	KBDLOCK
4	GND
5	GND
6	RESET
7	HDD
8	NC

P4 ~ P5	
PIN	NAME
1	+5 V
2	GND
3	+12 V

P8/P9	
PIN	NAME
1	NC
2	+5 V
3	+12 V
4	-12 V
5	GND
6	GND
7	GND
8	GND
9	-5 V
10	+5 V
11	+5 V
12	+5 V

P11	
1	+3.3 V
2	+3.3 V
3	+3.3 V
4	GND
5	GND
6	GND

P3	
PIN	NAME
1	+5 V
2	GND

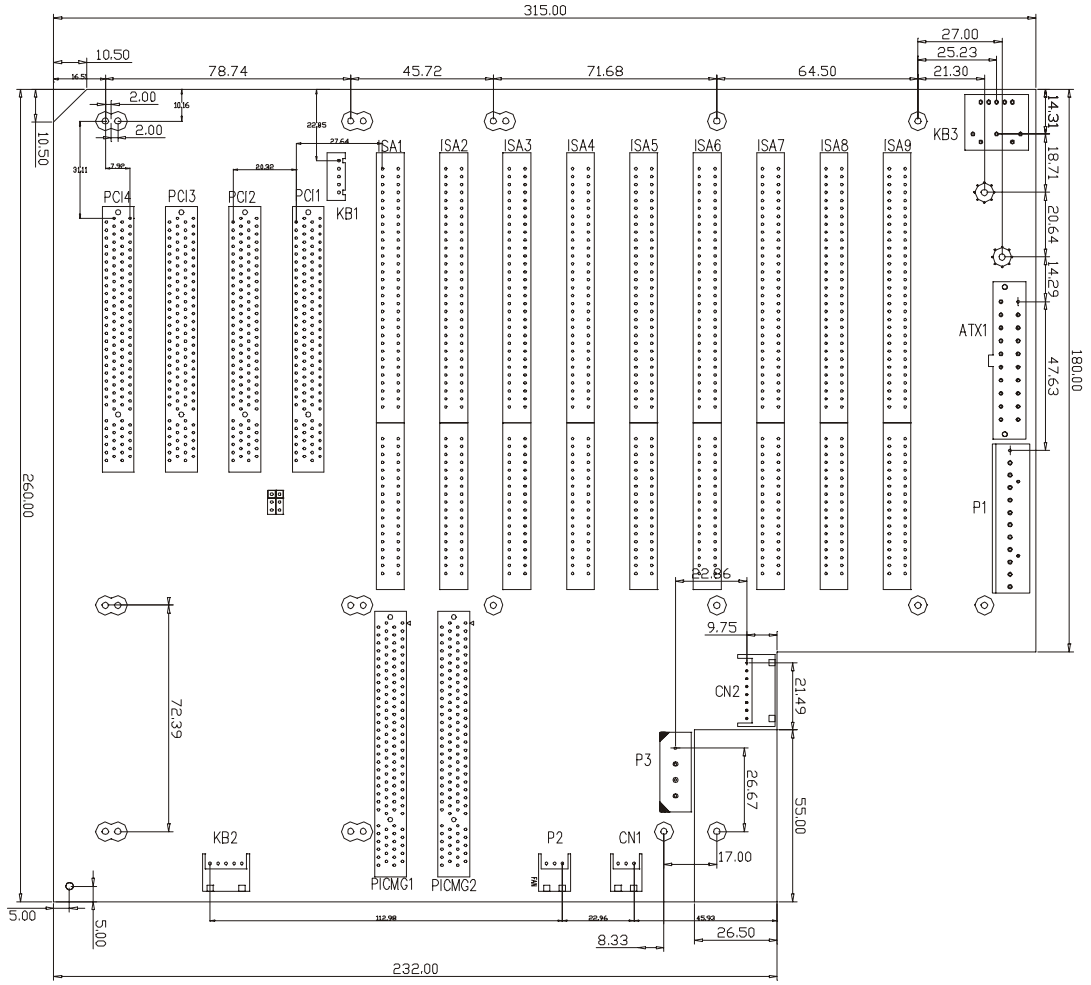
J1~ J3	
PIN	Name
1	CLK
2	DATA
3	NC
4	GND
5	+ 5 V

ATX			
PIN	NAME	PIN	NAME
1	+3.3 V	11	+3.3 V
2	+3.3 V	12	-12 V
3	GND	13	GND
4	+5 V	14	PS-ON
5	GND	15	GND
6	+5 V	16	GND
7	GND	17	GND
8	NC	18	-5 V
9	5V STB	19	+5 V
10	+12 V	20	+5 V

J4	
PIN	NAME
1	5 V STB
2	GND
3	PS-ON

A.5 PCA-6113P4R: 8 ISA / 4 PCI / 1 PICMG-slot Backplane

Dimensions: 260 x 315 mm



Unit: mm

1.CONNECTORS

CONNECTOR	DESCRIPTION
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PCI1~PCI4	32-bit PCI bus connectors
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KB2(KB-OUT)	5-pin external K/B connector
KB3	External K/B connector
P1	PS/2 power connector
P2	For +5 V and +12 V power connector
P3	Big 4 pin power connector
CN1	To CPU card for ATX power singal
CN2	Alarm board 8-pin power connector
ATX1	ATX power connector
J1	PCI1 IDSEL
J2	PCI2 IDSEL

CN1	
1	5VSB
2	GND
3	PS-ON
Default 2-3 PIN Close	

J1	
1-2 Close	PCI1 IDESL=AD31(Default)
2-3 Close	PCI1 IDSEL=AD27

J2	
1-2 Close	PCI2 IDSEL=AD30(Default)
2-3 Close	PCI2 IDSEL=AD26

2.PIN ASSIGNMENTS

CN2	
PIN	NAME
1	+12 V
2	-12 V
3	+3.3 V
4	+5 V
5	-5 V
6	GND
7	GND
8	5 VSB

P1	
PIN	NAME
1	NC
2	+5 V
3	+12 V
4	-12 V
5	GND
6	GND
7	GND
8	GND
9	-5 V
10	+5 V
11	+5 V
12	+5 V

P2	
PIN	NAME
1	+5 V
2	GND
3	+12 V

P3	
PIN	NAME
1	+12 V
2	GND
3	GND
4	+5 V

ATX1			
PIN	NAME	PIN	NAME
1	+3.3 V	11	+3.3 V
2	+3.3 V	12	-12 V
3	GND	13	GND
4	+5 V	14	PS-ON
5	GND	15	GND
6	+5 V	16	GND
7	GND	17	GND
8	NC	18	-5 V
9	5 VSB	19	+5 V
10	+12 V	20	+5 V

KB1~KB3	
PIN	NAME
1	KBCLK
2	KBDATA
3	NC
4	KBGND
5	KBVCC

Appendix B Exploded Diagrams

B.1 Exploded Diagram (internal components)

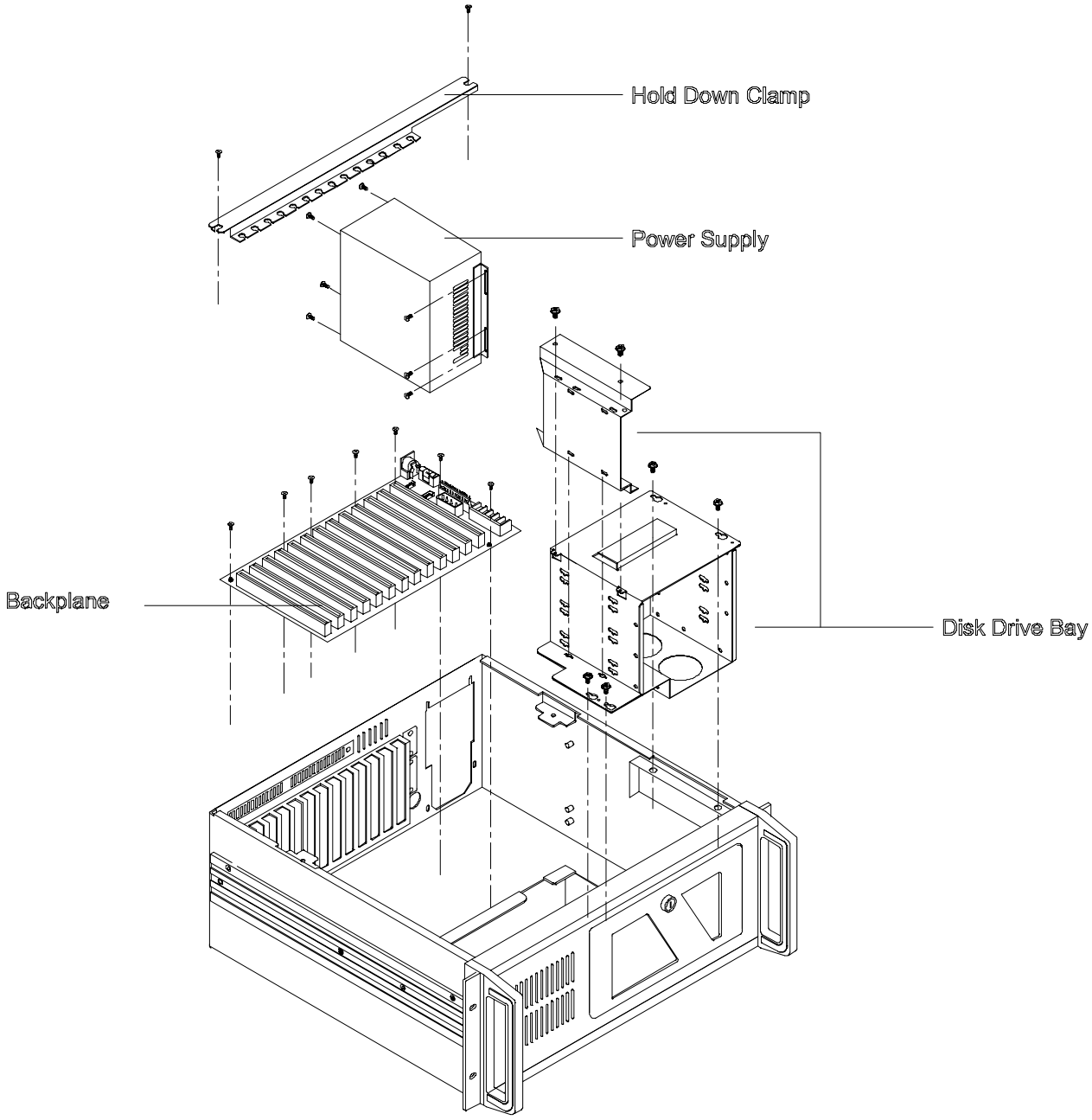

Figure B-1: IPC-610F exploded diagram (internal components)

B.2 Exploded Diagram (case components)

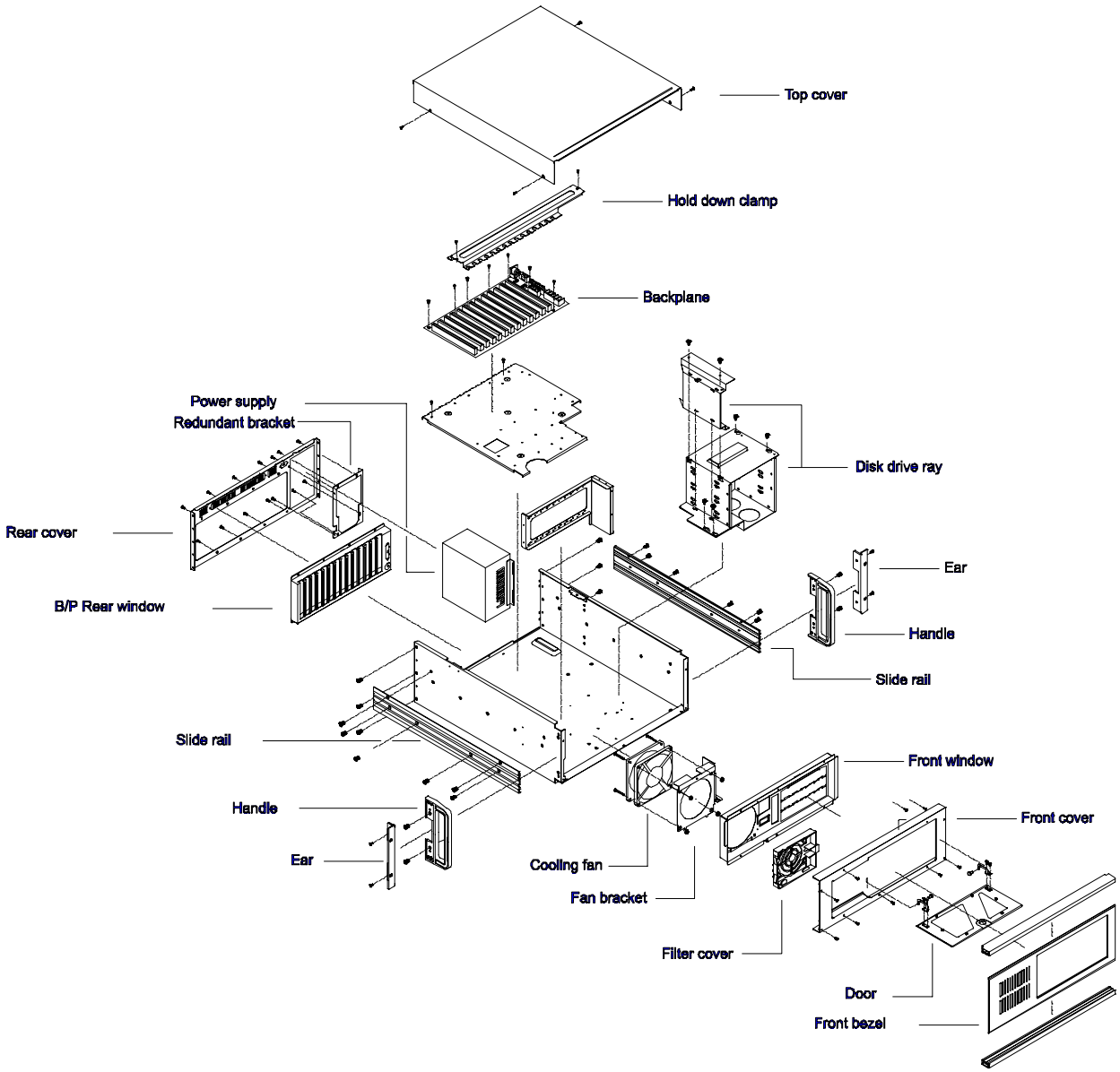

Figure B-2: IPC-610F exploded diagram (case components)

AppendixC Safety Instructions

C.1 English

1. Read these safety instructions carefully.
2. Keep this User's Manual for later reference.
3 . Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or sprayed detergent for cleaning. Use a moist sheet or cloth for cleaning.
4. For pluggable equipment, the socket-outlet should be installed near the equipment and should be easily accessible.
5. Keep this equipment protected from humidity.
6. Lay this equipment on a reliable surface when installing it. A drop or fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct when connecting the equipment to the power outlet.
9. Place the power cord in such a way that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the mains to prevent damage from transient overvoltage.
12. Never pour any liquid into any opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should only be opened by qualified service personnel.
14. If any of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well or you cannot get it to work according to this User's Manual.
    e. The equipment has been dropped and/or damaged.
    f. The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN UNCONDITIONED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS MAY DAMAGE THE EQUIPMENT.

    The sound pressure level at the operator's position according to IEC 704-1:1982 is equal to or less than 70 dB(A).

DISCLAIMER: This set of instructions is provided according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

C2 German - Wichtige Sicherheishinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die NetzanschluBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschluBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
    a: Netzkabel oder Netzstecker sind beschädigt.
    b: Flüssigkeit ist in das Gerät eingedrungen.
    c: Das Gerät war Feuchtigkeit ausgesetzt.
    d: Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioni ert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
    e: Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
    f: Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

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